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SOURCE Jen-min T'ieh-tao

DISCUSSION OF HSU CHING'S ANALYSIS OF TURNAROUND TIME

[Comment: This report presents the text of an article criticizing Professor Hsu Ching's notion of turnaround time and a summary of a rejoinder from Professor Hsu with an accompanying editorial note. The criticism, by Tsung Chih-lung, appeared in the Peiping periodical, Jen-min Tieh-tao, Vol III, No 11, November 1951. Professor Hsu's rejoinder and the editorial note are from the same periodical, Vol IV, No 1, January 1952.]

ARTICLE BY TSUNG CHIH-LUNG

Freight-car turnaround time is a composite indicator of the general state of performance in railway transportation. In other words, the characteristics and condition of the technical work of a railway bureau may be judged by noting its turnaround time. This fact is universally accepted by railway men throughout China. Because of the relationship among the values of various items in the formulas used for the calculation of turnaround time, certain items in one formula may be substituted in the proper places in another formula. While the accuracy of the figures for certain factors in the calculation may leave something to be desired, this is of no great consequence. On the whole, that fact does not reduce the usefulness of the concept of car turnaround time as a measure of railway performance. Furthermore, the concept of car turnaround time deals with objective conditons, and the authorities in charge, together with their expert advisers, are constantly trying to introduce improvements so that the turnaround time formulas will yield more accurate results. Any practice of this kind has to be developed and perfected. As for the concept of turnaround time itself, and the formulas used for calculating it, there is no question as to their correctness and advantages.

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In Chapter 32 of the November 1950 edition of Prof Hsu Ching's book Railway Statistics, the author reaches the following conclusion on car turnaround time and related procedures:

"It has too many defects; it does not conform to scientific principles, yields nothing of value, is not easy to implement, and ought not to be employed."

Hsu Ching is a professor in the National Communications University (Chiao-t'ung Ta-hsueh) in Shanghai, and his writings have been published by the Commercial Press. I fear that the bad effects of this sort of discussion will cause confusion among university students concerning the usefulness of the idea of turnaround time, and that this will spread to railway workers, affecting their efforts in connection with the operations the data on which enter into turnaround time calculations. For these reasons, I consider it necessary to criticize and correct Professor Hsu's assertions.

General Criticism

At the start of Chapter 32, Professor Hsu says:

"According to reports, freight-car turnaround time is a notion invented by a Soviet specialist which has agitated the railways throughout the country and attracted widespread attention in educational circles; but because the methods involved are complicated and no clear statement as to its particulars has been decided on and publicly announced, it is difficult to form a true picture of the notion as a whole."

Since the whole idea is not understood by Professor Hsu, how can he recklessly criticize it? This is the root of his error.

Chang Jen-chih has written an article on the subject "Car Turnaround Time and How to Calculate It." The article was written to explain car turnaround time to railway workers, most of whom at that time did not understand what it was. I myself wrote an article on the subject, entitled "A Discussion of the Car Turnaround Time for 1950 in the Territory of the Northeast Railway Administration." My purpose was to discover whether that figure had been set too high, and to consider whether the methods of calculation could be improved. My article was written to meet a need; if I had not understood the needs at that time, how could I have made my criticisms concerning the points that were not clear, and passed over the points that needed no mention? It is important to note that in our two articles Chang Jen-chih and I each expressed our own ideas. If there were mistakes in what we wrote, we of course should take the responsibility for them. But it is not proper on the basis of those two articles to critize the entire car turnaround time policy and procedure which has been adopted for all the railways of the country.

Professor Hsu says:

"Whether one is making a study of the average turnaround distance of loaded cars or of empty cars, both figures in the planned target are based on presupposition, and are not actual or exact. Speaking of the desires of shippers, that simply means the distance between origin and destination of the goods shipped, whether short or long. But the actual distances may vary every time shipments are made, and they may be changed without regularity or norm. It is necessary to wait until the cars have reached their destinations to know the exact figures for turnaround distance. How then is it permissible in each case, before the fact, to make arbitrary assumptions, and how can such arbitrary assumptions correspond with the actual facts and be combined with other items in the calculations?"

The purpose of planned turnaround time is to have in advance a guide as to how many cars in operation are going to be needed at a given time and place. If the number needed at a certain time and place is greater than those available, it is then necessary to consider which shipments of secondary importance may be deferred to release cars for the transportation of shipments of prime importance or urgency.

The planned average turnaround distance of loaded cars and of empty cars is calculated from data on shippers' requirements and in the light of past statistical records. Of course, there may be slight differences between the calculations and actual distances; it cannot be expected that the planned figures will be 100 percent correct. But as the degree of planned transportation is gradually increased, the disparity between planned figures and actual figures will gradually be lessened, since the direction and destination of the flow of goods comes later and is determined by the needs of society. It is impossible for planners to foresee the origin and destination of every car, and actually it is not necessary that they be able to do so. Professor Hsu does not understand planned transportation; still less does he understand the function and use of turnaround time in the planning of transportation. This being the case, he regards plans as arbitrary decisions or assumptions.

To enable the reader to understand more easily, I used some simple illustrations in my article. If every possible complicating condition were to be introduced in the illustrations, the reader would be confused and would be unable to grasp the main principle. Illustrations are not to be taken as the solution of actual problems. Because the illustrations do not take into account all possible circumstances, Professor Hsu should not assert that they are unrealistic and hence deny the principle, and should not slander the writer by saying that he has no basic knowledge of transportation.

When the planned turnaround time is multiplied by the daily work load, [as in the car-count formula], it is possible to calculate the number of cars in operation that are needed under the circumstances. Again, if it is desired to calculate the actual turnaround time, reports being available as to the number of cars in operation and the daily work load, it is possible [with the use of the same formula] to find the desired figure. The simple method used in the first case to find the number of cars in operation and the method used in the second case to find the actual turnaround time are used interchangeably. But Professor Hsu treats them as being independent and as different in principle and substance.

Criticism Concerning Individual Factors

Consider the following equation: the daily average [total] car-kilometrage, divided by the daily average [total] number of cars switched [alternatively expressed as the daily average number of cars that stop over in a station for switching and marshaling purposes], gives the average switching distance [see 00-W-30666 for further information on average switching distance]. Professor Hsu asserts that this is a misstatement of facts. What is his basis for this assertion? If in my articles the illustrations are simple and without complicating factors, is it proper for Professor Hsu to conclude that when a railway line or bureau makes its calculations in actual practice it ignores all the complicating factors in the various situations, and therefore to condemn the principle underlying the calculations? Is such a conclusion justifiable?

Professor Hsu makes the following statements:

"The shunting and marshaling of cars that takes place at stations of origin and destination [layover stations] is not different from the shunting and marshaling of cars that takes place at the various switching stations [stopover stations] en route. The shunting and marshaling work is entirely distinct from the loading or unloading work that takes place at the same station. If the time for shunting and marshaling of cars at layover stations is combined with the loading or unloading time at those stations, on the one hand, it will not agree with the true switching time (i.e., the switching time would be reckoned as less than it actually is); and, on the other hand, it will not agree with the true layover time needed for loading and/or unloading operations (i.e., the time for loading and/or unloading operations would be reckoned as greater than it actually is)."

For these reasons, Professor Hsu says that the expression "chung-chuan" (shunting operations) is misused [because as commonly used it includes only time for shunting operations at stopover stations en route, and does not include time at layover stations, which Professor Hsu claims should be included].

Layover time and stopover time are components of turnaround time, distinguished from each other by the time required by the operations performed on cars at layover stations, on the one hand, and at stopover stations en route, on the other hand. Loading and unloading of cars, on the one hand, and the shunting and marshaling of cars, on the other hand, are operations which cars have to undergo in the course of transportation of cargo, and are distinguishable from each other by the nature of the operations. Therefore, the expression "chung-chuan" is not, Professor Hsu says, equivalent to "pien-tiao" (marshaling and shunting). A station of origin or destination is not necessarily a marshaling station; even when it is, there is no need to separate the time used for marshaling from the total layover time and add it to the switching time at the stopover stations en route.

Our calculation of car turnaround time is to ascertain its quantitative value and to try and shorten it. To insist on a rigid division of the layover time, as Professor Hsu does, shows a lack of understanding and hinders the improvement of turnaround time. He does not appreciate the real object of calculating turnaround time; he wants to mechanically divide the layover time into shunting and marshaling time, and loading and/or unloading time. He does not understand what is meant by "chung-chuan" (operations at switching [or stopover] stations en route), and contends that the expression "chung-chuan" is wrongly used by China's whole railway system. Moreover, he asserts that the meanings of the expressions "Time of 'chung-chuan' operations" and "time of loading and/or unloading operations" are entirely incorrect and inexact.

With reference to average layover time, Professor Hsu says:

". . . As in the case of average stopover time, average layover time [when used in planning calculations] is based on the data of past operations, but that ignores the fact that prospective actual operations frequently, if not always, differ from the past; and, since it must be admitted that differences do occur, if data on the actual operations are not sought and used, there is no way of knowing what the true situation is. For this reason there is virtually no possibility that a predetermined standard or average layover time will coincide exactly with the actual average layover time; this being the case, what is the use of it for purposes of management?"

Average stopover time and average layover time used in the calculation of planned car turnaround time are targets or objectives toward which railway workers strive. They may fall short of, fulfill, or surpass those targets. Of course it is not often that the planned and the actual exactly coincide. Nevertheless, that they seldom exactly coincide is no proof that the planned targets have no value as a guiding objective. Professor Hsu does not understand the reasons for planning work, and he asserts that, since planning figures do not exactly agree with the actual figures, they therefore have no usefulness for purposes of management.

Again, speaking of layover time, Professor Hsu writes:

"Chang Jen-chih states plainly in his article that it [layover time] embraces shunting and marshaling time as well as loading and/or unloading time; in the article by Tsung Chih-lung, loading and/or unloading time is explicitly mentioned and no mention is made of shunting and marshaling time. Thus it is plain that the two men differ about the same part of the same question. I am unable to see that the term 'layover time' applies only to loading and/or unloading operations. In practice, unless they look carefully into the matter, people often wrongly understand standard layover time to include only loading and/or unloading time."

When I [Tsung Chih-lung] wrote my article, layover time included both shunting and (un)loading time, and railway men were basically clear on this point. Now, an unloading operation and a loading operation ought to be considered as two separate operations. But when unloading and loading operations both took place in the same station, it was the practice of our railways to count a layover period as one operation, regardless of whether one or both operations took place. Therefore, in my article I conformed to the then current practice in the preparation of statistical data, and this point needs to be made clear. One layover period of two operations naturally includes both shunting time and unloading and loading time. The facts tell us that people -- we are speaking of people who are concerned with car turnaround time -- are not in error in this matter; it is Professor Hsu who is in error.

Professor Hsu writes:

"The advocacy of operation of more direct through trains in order to shorten car turnaround time is a sort of 'sour grapes, half-baked' counsel. Those who advocate this have fallen into the error of placing too much emphasis on one aspect of a problem and neglecting other aspects of it. Such one-sided views are traceable to lack of railway knowledge. To talk only of speed of turnaround time is not a full and adequate treatment of the problem of economical utilization of cars."

When we advocate more direct through trains, it positively is not a matter of accepting for transport cargo that meets the conditions for long hauls by direct through trains and refusing for transport, in whole or in part, cargo that does not meet those conditions. Rather, on the basis of existing flow of goods, it means to dispatch the freight in such a way that more of the trains employed are direct through trains. In this way, the time spent in stopover [marshaling] stations may be reduced, and this tends to shorten the turnaround time. It means that, with the same number of cars, a larger amount of transportation can be effected.

I have no idea what Professor Hsu means by his references to "sour grapes and half-baked counsels," and "the lack of an understanding of transportation knowledge." Professor Hsu says:

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I have no idea what Professor Hsu means by his references to "sour grapes and half-baked counsels," and "the lack of an understanding of transportation knowledge." Professor Hsu says:

"With regard to travel speed, average stopover time, and average layover time, the monthly reports show that there are good and bad months; they do not show a gradual and continuous improvement in operation; and this is evidence that all this talk [about average stopover time, average layover time, etc.] has been ineffective."

It should be noted that travel speed, average stopover time, and average layover time are affected by climatic conditions (particularly in the Northeast) and by other objective causes (such as floods, military contingencies, etc). which hinder a steady and continuous improvement. If these considerations are taken into account, it is not fair to say arbitrarily that efforts at improvement that use the idea of turnaround time and its attendant practices have been ineffective.

Because the examples used in my article omitted the figures for certain months, Professor Hsu says:

"All these ... matters tend to disprove [the advantages claimed for] turnaround time; the compiling of the data and the calculations involved are too complicated. As for the figures that are derived from the calculations, there is doubt as to their correctness and reliability."

The lack of figures for several months is accounted for by the fact that the data available to me when my article was written were incomplete. How can it be concluded arbitrarily that the calculations involved are to complicated and too difficult? Still less that the figures derived are of doubtful correctness and reliability?

I trust that Professor Hsu and my readers will correct and instruct me if what I have written here is not right.

REPLY FROM PROFESSOR HSU

Note by Editor of "Jen-min Tieh-tao"

Since articles criticizing Professor Hsu Ching's book Railway Statistics have appeared in the 23 August and 30 October 1951 issues of the Jen-min Tieh-tao Pao (Railway Newspaper), and in Vol III, No 11 (Nov 1951) and Vol III, No 12 (Dec 1951) of the Jen-min Tieh-tao (Peoples Railways) Professor Hsu has openly discussed the matter, and on 23 December 1951 he submitted to this periodical a written article on the subject. From this article it may be seen that Professor Hsu has begun to see his errors, but still he has not eradicated from his thinking the taint of his propertied-class education [in the US].

Summary of Professor Hsu's Rejoinder

1. Professor Hsu accepts the criticism that he esteems the US and things American, particularly American railway management and operations. He explains that this is only natural from having received his higher education and subsequent practical experience in railway matters in the US.

2. Professor Hsu admits that since China has adopted a socialist form of government, with nationalization of railways and conditions differing from those in the US, American methods of railway management and operation are unsuitable for China, and that he now understands why Soviet principles and methods are more suitable for China.

3. Hsu recognizes that the criticisms of him and his book have been generally well-founded.

4. He confesses that his criticism of the notion of car turnaround time arose from ignorance or misunderstanding of its contents and purposes.

5. Professor Hsu does not defend his disparagement of car turnaround time; and does not further discuss the technical aspects of the subject.

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